

## REMARKS

This Preliminary Amendment is filed concurrent with entry into the National Stage in the U.S. Patent and Trademark Office for PCT Application Serial Number PCT/US00/20451 filed July 27, 2000.

The PCT Application included original Claims 1-4. Original Claims 1-4 are amended herein, and Original Claims 2, 3, and 4 are renumbered as Amended Claims 10, 12, and 18, respectively. New Claims 2-9, 11, and 13-17 are added herein.

Applicants very respectfully request entry of this Preliminary Amendment.

## CONCLUSION

Applicants very respectfully request entry of this Preliminary Amendment, and consideration and allowance of all claims in the application.

Respectfully submitted,

BLACK LOWE & GRAHAM<sup>PLLC</sup>

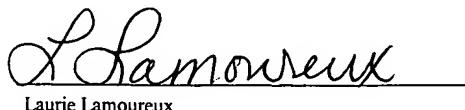


Robert R. Richardson  
Registration No. 40,143  
Direct Dial: 360.662.0487

## EXPRESS MAIL CERTIFICATE

I hereby certify that this communication is being deposited with the United States Postal Service via Express Mail No. EL476256979US under 37 C.F.R. § 1.10 on the date indicated below addressed to: BOX PCT, Assistant Commissioner for Patents, Washington D.C., 20231.

12/26/2001  
Date of Deposit

  
Laurie Lamoureux

BLACK LOWE & GRAHAM<sup>PLLC</sup>

VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended) A flight information display for [the] a flight deck of an aircraft, the display showing a side view of [the] a flight path or [the] area directly in front of the aircraft [area] having a selected distance of at least 0.5 nautical miles, the aircraft having means for determining the aircraft's location, the location determining means having a minimum accuracy, the display comprising:

[(a)] a pictorial representation to scale of [the] a profile of [the] highest elevations of a swath of terrain along [said] the path area, a width of the swath being at least 0.1 nautical miles and no greater than a distance of the minimum accuracy of the location determining means;

[(b)] an icon representing the aircraft, the icon being positioned on [the] a left or right side of the display [representing the aircraft], the altitude of which is to scale with the height of the terrain[,]; and

[(c)] an altitude reference scale[;]

wherein the width of the swath is at least 0.1 nautical miles and no greater than the distance of the minimum accuracy of the means for determining the aircraft's location].

2. (New) The display of Claim 1, further comprising a top-down display of a range of terrain in front of the airplane to a compass rose, wherein the selected distance shown in the side view is at least half the range of terrain shown on the top-down display.

3. (New) The display of Claim 2, wherein the selected distance shown in the side view is no greater than two times the range of terrain shown on the top-down display.

4. (New) The display of Claim 2, wherein the selected distance shown in the side view is the range of terrain shown on the top-down display.

5. (New) The display of Claim 1, wherein the swath is substantially rectangular, the length of a first section of the swath extending along a track of the aircraft from a nose of the aircraft to about 2.5 nautical miles from the nose of the aircraft, the width of the first section of the swath extending about 0.25 nautical miles about the track of the aircraft.

6. (New) The display of Claim 5, wherein the length of a second section of the swath extends from about 2.5 nautical miles from the nose of the aircraft to about 5 nautical miles from the nose of the aircraft, the width of the second section of the swath extending about 0.75 nautical miles about the track of the aircraft.

BLACK LOWE & GRAHAM<sup>PLLC</sup>

7. (New) The display of Claim 6, wherein the length of a third section of the swath extends from about 5 nautical miles from the nose of the aircraft to an edge of the display, the width of the third section of the swath extending from about 1 nautical mile about the track of the aircraft to about 8 nautical miles about the track of the aircraft.

8. (New) The display of Claim 1, wherein a boundary of the swath rotates away from the track of the aircraft in a direction of a turn, the boundary rotating from a rotation point at the origin of the track of the aircraft.

9. (New) The display of Claim 8, wherein the swath rotates  $\emptyset/2$  degrees, where  $\emptyset$  is a bank angle of a non-accelerated, constant altitude turn.

10.[2.] (Amended) A flight information display for [the] a flight deck of an aircraft, the display showing a side view of [the] a landing approach path for the aircraft on a runway, the display comprising:

- [(a)] a pictorial representation to scale of [the] a profile of [the] a current projected path of [the] descent of the aircraft;[,
- (b)] a pictorial representation to the same scale of [the] a profile of [the] a vertical glide slope of the approach path; [plate,
- (c)] an icon positioned on the left or right side of the display representing the aircraft[;], the altitude of which is depicted to the same scale[,]; and
- [(d)] an altitude reference scale.

11. (New) The display of Claim 10, wherein the representation of the glide slope includes a triangle overlaying the projected path of the descent of the aircraft.

12.[3.] (Amended) A flight information display for [the] a flight deck of an aircraft, the display comprising:

- [(a)] a [fixed reference point or] first icon representing [the] a current location of the aircraft[,
- (b)] a pictorial representation of at least 0.5 nm of [the] a profile of [the] a projected flight path of the aircraft; and[,
- (c)] a second icon showing [the] a location at which the aircraft will reach a target speed based on its current speed and acceleration[. This], the display [provides] providing an indication of where in [the] a vertical plane and along the flight path the target speed will be achieved.

13. (New) The display of Claim 12, wherein the second icon is located toward the nose of the aircraft when a difference between current speed of the aircraft and the target speed is less than a predetermined threshold.

14. (New) The display of Claim 13, wherein the second icon is located toward the location at which the aircraft will reach the target speed and the icon has a first size when the difference between current speed of the aircraft and the target speed is greater than the predetermined threshold and the aircraft is projected to reach the target speed at a distance within range of the display.

15. (New) The display of Claim 14, wherein the second icon is located toward an edge of the display away from the first icon and the second icon has a second size that is larger than the first size when the difference between the current speed of the aircraft and the target speed is greater than the predetermined threshold and the aircraft is projected to reach the target speed at a distance beyond the range of the display.

16. (New) The display of Claim 12, further comprising a plurality of second icons, each of the plurality of second icons indicating a location at which the aircraft will achieve the target speed at a different flight angle.

17. (New) The display of Claim 12, wherein location of the second icon is calculated according to the equations:

$$d_{achieve} = vg_{current} * (t_{achieve}/3600) + (\frac{1}{2} * ag * \cos(\gamma) * t_{achieve}^2)/6067 \quad \text{Eq. [1]}$$

$$h_{achieve} = vs_{current} * (t_{achieve}/60) + \frac{1}{2} * a_{current} * \sin(\gamma) * t_{achieve}^2 \quad \text{Eq. [2]}$$

$$t_{achieve} = ((v_{selected} - v_{current}) * 6067) / (3600 * a_{current}) \quad \text{Eq. [3]}$$

$$a_{current} = ((v_{final} - v_{initial}) * 6067) / (3600 * (t_{final} - t_{initial})) \quad \text{Eq. [4]}$$

where: a = airspeed acceleration in ft/sec<sup>2</sup>; v = calibrated airspeed in knots; t = time in seconds; d = distance along the ground in nm; h = height in feet; vg = Ground Speed in knots; vs = Vertical Speed in ft/min; ag = Inertial acceleration along  $\gamma$  in units of g (32 ft/sec<sup>2</sup>);  $\gamma$  = Flight Path Vector in degrees.

18. (Amended) A flight information display for [the] a flight deck of an aircraft, [which comprises] the display comprising:

[(a)] an icon having a fixed position on [the] a left side of the display representing the aircraft;

[(b)] a vertical altitude reference scale which changes as [the] altitude of the aircraft changes so that [the] an altitude number horizontally aligned with the [aircraft] icon is [the] current altitude of the aircraft, [and aircraft] the icon [is]

being located vertically along the altitude reference scale while always being in view[,] of a user; and

[(c)] a pictorial representation of a lateral view of [any] terrain directly in front of the aircraft.

**BLACK LOWE & GRAHAM<sup>PLLC</sup>**